



Meeting Report
Key Elements in Breaking the Climate Change Deadlock
OECD Headquarters, Chateau de la Muette, Room G
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Introduction

An international group of policy and governance experts met with the OECD secretariat in Paris to explore elements necessary to break the global deadlock on climate change. We reviewed the status of preparations for the Japanese G8 Summit, the UNFCCC and the Major Economies Initiative on Energy Security and Climate Change. We reviewed forecasts of energy demand, the key to reduce the climate change threat. To determine possible ways forward, we explored carbon taxes and emission schemes, nuclear power, biofuels, and technology development and transfer. For each of these four sessions, presenters had been asked to assume the role of a “Philosopher King” and to prescribe who should do what, how and when. What win-win-win policy initiatives should be taken by the G8+5 and by the OECD? Specifically, they were asked to identify for Leaders:

- What specific policy initiatives should they commit to pursue in their own countries?
- What instructions should they give their Ministers to work together towards specific ends in the various international organizations?
- What new international entities or mechanisms should they commit to create?

Context

The G8 continues to play an important informal role of injecting new ideas into international debates, channeling initiatives into organizations that have legal status. “Nothing can replace the *tête à tête* meetings of those in charge.” Direct and candid dialogue in an informal atmosphere is a unique advantage, permitting leaders to push away papers, and speak their minds on tough issues and difficult choices. But, the legitimacy of decisions made and ideas generated by the G8 are becoming less relevant if they don’t include other actors. The G8+5 (Brazil, China, India, Mexico and South Africa) dialogue that began at Heiligendamm needs to continue in Japan and beyond. There is increased concern that the progress made in Germany in 2007 will be threatened in Japan, pushing the G8 and the “+5” into separate entities. In Japan, the opportunity to include the +5 in a more meaningful way should not be missed.

President Sarkozy has proposed a G13 or G14 (adding an Arab or Islamic state to the G8+5). G8 pronouncements will have less and less relevance if other major countries are not associated with them. The Heiligendamm process of informal dialogue of the G8+5 will likely crystallize slowly, hopefully into one group rather than a confrontation and North-South divide. There will be significant resistance to changing the “family gathering” of the most industrialized democracies. It appears that Japan and Germany, looking to their own national interests, will link G8 expansion to permanent seats on the UN Security Council. The challenge is to avoid the appearance of two blocs.

The Europeans are pushing for the G13 to discuss the results to date of the Heiligendamm process (Innovation, Investment, Development cooperation and Energy efficiency working groups). The “+5” are pushing for involvement in agenda setting and meeting preparation to allow for meaningful discussion. On climate change, the US administration wants action before the end of the Bush term. Their Major Economies Initiative (the G8 +5 + Australia, Indonesia and Korea) covers countries with 80% of emissions. Any agreement on proposals to be put into the Bali process would provide a significant boost. The Japanese must wrestle with sculpting a summit agenda (including the currency problems, the global economy, and the energy supply crisis) to allow time to meet with the +5 countries.

We noted the lag of international organizations and arrangements to respond to changes. The most pressing problems are “without passports” and require global solutions – but capacity

remains with nation states. The United Nations is the legitimate institution to agree on global solutions, but its renders it inefficient to make, implement and force collective decisions. The Cold War's East-West divide has been succeeded by a North- South line, soured by differing everyday realities and mutual mistrust. The G8 members bear primary responsibility for the climate change problem and the +5 nations speak from a position of strength.

We reviewed Chinese motivations (climate change is not central among the issues facing China's leaders); the limitations of the Bali Process (insufficient involvement of Finance, Security, Economy, Energy and Agriculture Ministers); the merit of waiting until 2009 for a new US administration (but the next President's first six months will be monopolized by the US budget, Iraq, nuclear proliferation and currency problems); and whether the Summit should have a permanent Secretariat staff to monitor follow up.

Interesting observations included:

- The evolution of the G8 is slow and incremental. The Italians, next year's G8 chair, may join the other Europeans to establish a G13;
- The choice of an Islamic country is not clear; Egypt would represent Arab countries and Africa; demographic and oil considerations point to Indonesia;
- There will be no agreement in 2008; the US Administration will continue to push the Major Economies initiative. This is still a good idea. There is a need to find funds for transfer of clean technology without "taxing the G8 to make its competitors more competitive". The way forward is to focus on industries with less tradable products like cement;
- The "+5" must assume binding constraints in order for the US to accept the same. The challenge is to impose different constraints while maintaining a "level playing field".
- China's National 5 year plans can be transformed into constraints. We must be mindful that the Chinese preoccupation, while mindful of pollution problems, is the imperative to create 25 million jobs a year in order to avoid social unrest.
- The OECD, "the Rolls-Royce of international organizations", is set to become the hub of globalization - more systematic cooperation is taking place with other international organizations: in health with the WHO, in corporate social responsibility with the ILO, and in sovereign wealth funds with the IMF.
- The goal of 450ppm CO₂ is possible with small technological changes that are affordable but not cheap.

Energy and Climate Change Forecasts

China and India are engines of global energy demand—economic development is their top priority. The next 10 years are critical. Global demand for energy will increase by more than half over the next quarter of a century, with coal use rising most in absolute terms. Global CO₂ emissions will rise to 42 gigatonnes in 2030, 57% above current levels and double the 1990 level. China was the largest emitter in 2007 and India will be the 3rd largest by 2015. China & India will contribute almost 60% of the cumulative increase in global carbon dioxide emissions between 2005 and 2030. Immediate global action is imperative. Capacity additions in the next decade will lock-in technology (coal fired power plants have a lifetime of 60 – 70 years) and largely determine emissions through 2050 & beyond. There will still be pressure for more development—in 2030, if no major new policies are implemented, there will still be 1.4 billion people without electricity.

In practice, the '450ppm Stabilization Case' entails increases in carbon capture and sequestration (CCS) both in industry and in power generation, investment in nuclear, renewables, and switching from coal to gas, and substantial increase in end use electricity efficiency and end use fuel efficiency. To stabilize at 450 ppm, between 2013 and 2030, we will need average annual power generation capacity additions of the order of 22 CCS (800 MW) coal-fired plants, 20 CCS (500 MW) gas-fired plants, 30 (1000 MW) nuclear reactors, 2 Three Gorges Dams, 400 (40 MW), biomass (combined heat & power) plants, and 17,000 (3 MW) wind turbines.

G8 decisions without China and India will not be fruitful. To achieve a target of reducing carbon emissions by 3 gigatons (from 27 gigatons today to 24 gigatons) by 2030, CO₂ emissions need to peak in the next 10 years. The alternative is a 6 degree rise in temperature. The solution requires:

- End use efficiency to increase by 2.7%/year (compared to 1.6%/year over last decade)
- CCS needs to become effective as soon as possible.
- No new power plants after 2013 that emit carbon – total reliance on nuclear, renewables and CCS.

The current picture appears to be much worse than the IPCC worst case scenario. The biggest uncertainty we face is the pace and nature of China's economic growth. It is important to work with the Chinese to help guarantee energy security while pursuing climate change policies.

Observations included:

- There is huge inertia in the system. Investments (and our mental frames) are locked-in for the next 10 years—we have billions of dollars in plants and buildings under construction. We have to determine our real scope of maneuverability even with powerful new incentives. The challenge is how to convey a deep sense of reality to Leaders and how to inject a sense of the imperatives of acting now. What options should we push now and to provide the necessary dramatic behavior change to catalyze the turning points required. The non-OECD countries argue that OECD countries became rich using cheap polluting technology and we want to constrain their development with expensive technology.
- We should start with end-use efficiency, which has universal benefits. End use efficiency in China is key—every second square metre of new building (much of poor standard and unlikely to be refit) is in China.
- We should not lump India and China together. Given the distribution of coal resources and financial capacity, we should focus on China and the US.
- Ideally, we need early retirement of inefficient, vintage coal-fired plants.
- Relying on CCS as a means to achieve climate change goals is irresponsible—we do not yet know how to effectively capture and store carbon. We'll be lucky to see a contribution in twenty years. There are at least 10 years of R&D required to determine whether or not reservoirs leak and the effect on water supply.
- The priority should be on realizing the huge scope for technology transfer. No institutions are good at it. Current initiatives do not work. Every rule in the OECD rulebook on donor coordination is being broken.
- Don't be optimistic; the "talk" is not being reflected in real life. We need international arrangements—a price on carbon and incentives.

Carbon Taxes and Emission Trading Schemes

We discussed the use of fiscal and/or regulatory approaches to restrict the global demand for carbon.

We reviewed the OECD's "Environmental Outlook to 2030" GHG simulation. The scenario stabilizing at 450ppm would lead to an emissions pathway peaking before 2020. To stabilize at 450ppm, global emissions in 2050 are cut by 40% compared to the 2000 levels. The "smart" scenario that optimises action over time assumes a low carbon tax early (2008), then phasing it in rapidly to a level of 150 USD per tonne of CO₂ in 2050 (constant 2001 USD). (The same effect could be achieved by an emissions trading system). The scenario assumes that producers and consumers are informed about the development of future fuel prices well in advance so that they can move to cleaner capital when their capital stock is changed; that deforestation is significantly reduced, and that energy efficiency opportunities for buildings and transport are taken up.

If OECD countries try to 'go it alone', adding a carbon tax of 25 USD per ton of carbon in 2008 and steadily increasing that tax, it will not be enough to reduce global GHG emissions. The more countries brought on board, the earlier the actions are taken, the more effective mitigation policies get. The distribution of the costs of the 450 ppm globally harmonised tax case reflect action being taken where it is least-cost globally—but this would place an unacceptable burden on some developing countries. As such, some way of redistributing the costs of action, or burden-sharing, will be needed. Applying a globally harmonised tax on emissions to achieve the 450ppm case would have an economic impact that is lowest in OECD countries (about 1% loss in GDP in

2050), while the GDP losses in Brazil, Russia, India and China (BRIC) would be roughly 5 times this level, and those in the rest of the world (ROW) about four times as high. We need mechanisms for burden-sharing to redistribute the costs of efforts within any international collaborative framework.

The total costs of achieving the 450 ppm target with a global cap-and-trade approach would be roughly the same as under a global tax scenario. But the rules for allocation of emission permits could be designed so as to better share the burden of the costs of action. Under the OECD simulation the direct investment costs for emerging economies would be less than half compared to the globally harmonised tax case, as industrialised OECD countries would buy emission permits from the BRIC countries. This could help to ensure that mitigation action still takes place where it is least cost (and thus efficient globally), but the burden of paying for mitigation action can be redistributed in a way that is fair and equitable.

The required transformation of the world's energy system will require economy-wide measures that make emissions costly – through emissions taxes, and/or cap-and-trade systems. Design decisions include scope and point of application in the economy (at the point where a unit of emitting energy enters the economy, or at the point of actual emissions); and stringency, as subsequently adapted over time.

Criteria; measures should:

- Deploy uniform and sustained incentives, as broadly as possible across the economy.
- Be strong enough to re-orient investment and R&D decisions, without premature scrapping of existing capital.
- Be neutral over technologies that promise to contribute to emissions reductions.
- Be as simple and transparent as possible, to reduce administrative burden and gaming opportunities, and to allow monitoring.

These criteria tend to favor emissions taxes over cap-and-trade systems, applied upstream for maximal coverage and simplicity, starting at an initial level of \$20 to \$30 per tonne of CO₂-equivalent emissions, subsequently adjusted with adequate notice and lead-times.

Current programs and proposals are opting for cap-and-trade systems, applied downstream with coverage of just the largest emissions sources. For political reasons initial caps have been gentle, resulting in marginal costs of a few dollars per tonne. Prospects for long-term effectiveness are poor, due to limited coverage (reducing cost-effectiveness), administrative complexity, volatility of permit prices (impairing provision of sustained investment incentives), and providing many gaming opportunities. Financial-market actors who might trade, make markets, and construct derivative instruments in emissions permits. The support of these actors may come at the cost of significant transaction costs or rent-seeking that obstructs appropriate adaptation of the system.

One proposal was to first, enact (with two years notice) an emissions tax of \$30 per tonne of CO₂-equivalent emissions, at point of production or import on energy-related CO₂ emissions and—as feasible—on point-source emissions of other greenhouse gases. Rebate this tax on energy exports and injection into long-term sequestration sites. Initially apply the revenues entirely to reduce other taxes. The tax should increase at perhaps 5% (real) per year. The incremental revenues from annual increase in the tax would not be committed at the outset, in order to make them available for technology investments, at home and abroad.

More narrowly targeted regulatory measures and performance standards will be necessary in specific high-priority sectors—we do not expect fast enough adjustments in response to the economy-wide incentives propagated through energy markets. Seemingly win-win small technical changes are not being made—the Black and Decker Dustbuster example was described.¹

¹ This example was cited, whereby the technological improvement of adding a small component that would reduce power consumption of the charger for the battery operated device when fully charged or not in use was not implemented, regardless of the small marginal cost of the improvement.

The Contribution of Nuclear Power

The session focused on how to minimize the risk of nuclear weapons proliferation from nuclear energy production. Nuclear energy is expanding, with more countries with power reactors, which means more proliferation risk. Countries with a wide range of industrial capacity (India, Israel, North Korea, Pakistan, and South Africa) have succeeded in building nuclear weapons. There are few incentives for a country to not create its own fuel cycle. The bottom line is that no reactor fuel cycle can be made proliferation-proof on technical grounds alone. (It only takes a small straw sipping at the enriched feed stock to suck out enough for a uranium weapon.) We need binding international agreements with incentives, effective inspections and sanctions. Advanced safeguards can help, but only in the sense of giving earlier warning that something may be going on. We will need agreement on how strong sanctions should be in the event of some violation. Success requires the “Haves” to talk to the “Have-nots”.

The answer requires internationalization of both ends of the nuclear fuel cycle, as suggested by ElBaradei and President Bush. On the front end, currently there are only four suppliers of enriched uranium: USEC (investor owned and operated); Urenco (internationally owned and operated); Eurodif (internationally owned and French operated); Russia (state owned and operated). There is a need for political diversity in suppliers. A proposed way forward is for China to start commercial enrichment. Other countries should enter into the enrichment business—Canada, Mongolia and Australia—diversifying the supply of enriched uranium. The idea of leasing enriched uranium becomes a more feasible option as supply increases. The IAEA must establish an enriched uranium fuel bank.

At the other end, the reprocessing and storage of spent uranium must be internationalized. Internationalizing reprocessing would limit breakout potential. We need internationally owned reprocessing plants (but limit the spread of reprocessing technology). To deliver enriched fuel at low cost to countries new to nuclear power or with few reactors, leasing may be the answer. The Global Nuclear Energy Partnership² is one approach. This will respond to the problem that the upfront burden of the capital cost investment makes nuclear power financially impossible for many countries despite being economically practical.

The Contribution of Biofuels

In 2007, world ethanol and biodiesel production hit new highs, with the US beginning to outpace Brazil on ethanol production. Feedstock prices soared - corn, wheat, soy, rapeseed and palm oil approached record highs in key markets. Ethanol and biodiesel prices fell in many markets. Currently, 1% of agricultural land use went to produce biofuels and only 1% of fuel used worldwide is biofuel.

With a significant proportion of the world’s arable land turned over to biofuels production in most energy scenarios, the food versus fuel debate is intensifying.

With the global energy system on an increasingly unsustainable path, policy developments tend to continue the push for more biofuel, with some notable exceptions. Biofuels can be helpful in enhancing oil security but the barriers include relatively high production cost, very large land requirements, and poorly understood environmental impacts. We have yet to ensure that biofuels have a positive result on emissions. We must be aware of the biodiversity effects of producing biofuels: displacement, water use, and deforestation. We must consider the food vs. fuel dilemma. The main constraint is the amount of currently unused land available that could be brought into production in a sustainable way. Technological breakthroughs will likely help to address these barriers, but it is hard to say when second generation biofuels will emerge. New approaches will require land, though perhaps much less per unit energy, and with less displacement of food production.

² The GNEP, announced February 6, 2006, is a plan to form an international partnership to reprocess spent nuclear fuel in a way that renders the plutonium in it usable for nuclear fuel but not for nuclear weapons longer term; there is no need to wait on front end issues.

Life cycle analysis is challenging on several fronts. Thermodynamic efficiency will drive processing scale. Ecosystem impacts vary with scale. Feedstock logistics will be critical. There is a natural variation in biological processes. Agricultural lands do not have CO₂ flux monitors. Co-products are an essential part of the economics. Second order effects like induced land use change are significant, yet intractable (validating models will be controversial).

Because life cycle analysis of the potential of biofuels will remain contentious, stable policy frameworks will be essential for private investment in biofuels. Future policy must focus on both the development of new technology and the rapid deployment of the both new and existing technology. Subsidies and other support mechanisms are going to be part of the landscape—early deployment may need direct assistance. Purchase incentives and/or the CO₂ market will drive the early deployment phase.

Learning is expensive; a stable policy framework is required. Innovation, development and deployment are all required. Once established, subsidies are hard to remove. In the case of feedstock supports they have become perverse. Next generation processes are required for answering ecological challenges, but support of first generation feedstock undermines their economics. Adjustments seem to be required to ensure net environmental benefits, but ad hoc changes undermine confidence. Urgent action is needed to facilitate the development and deployment of advanced energy related technology.

R&D of potentially sustainable biofuel technologies should be subsidized. Direct research funding like “cash grants” and initial capital support like “investment tax credits” are effective support measures. Biofuel subsidies have many forms: “blending mandates”, “fuel-tax incentives” and “biofuel tariffs”. Subsidies should be result oriented, budget limited and time-bound—planning for eventual withdrawal of unneeded support. Biofuel support schemes should be performance and externality based; good examples are the Renewable Transport Fuel Obligation in the United Kingdom and the Low Carbon Fuel Standard in California.

A premium should exist to ensure sustainable biofuel trade. International trade policies should ensure overall supply chain sustainability. Schemes like “Guarantees of origin” in Europe, and “Renewable identification number” in the US, are examples. The international trade policies should support comparative advantage, in terms of both GHG mitigation and feed stock production.

One participant wondered if biofuel approach is best suited to local/regional solutions rather than global. It might not be a transferable solution abroad and for some countries it could even have a destructive impact.

Technology Development & Transfer - CDM and Other Options

The question posed was how to advance both climate change and sustainable development agendas and meet three challenges: expanding the energy supply and services, improving the efficiency of conversion of energy supply into energy services, and replacing traditional technologies by modern, clean technologies. We discussed one five part solution:

1. *Global energy innovation centers jointly funded by Annex-II countries and host developing country* - a cooperative technical program driven by developing countries needs: adaptation of commercially-mature technologies; R&D, adaptation, and demonstration for emerging technologies; and development of technologies, products and innovative delivery models for provision of energy services for the energy-poor and for rural areas.
2. *Financial assistance for “uneconomic” technologies* - graduated financial assistance, where the portion of the incremental costs that would be covered by Annex-II countries would depend on the per-capita GDP of the recipient country.

3. *Accelerate technology deployment in industrialized countries* - implement targeted policies (e.g. aimed at IGCC³) to reduce costs and technical risks. The counterintuitive suggestion is based on the fact that it is cheaper to deploy new technologies in industrialized countries.

4. *Knowledge sharing for enhancing deployment*, where non-economic barriers hinder the deployment of technology that otherwise makes sense from the economic, climate and/or SD point of view. Explore innovative approaches such as social marketing.

5. *Explore innovative models* - explore alternative ways of enhancing and accelerating innovation such as challenges/prizes, guaranteed markets, and free or low-cost licenses of key technologies to developing countries (build on lessons from other areas, including global health).

The discussions turned to Kyoto's Clean Development Mechanism (CDM) which was harshly criticized as having little incremental impact, providing windfall gains for plants planned before that would have been built anyway. The CDM has a bias against technical change and results in overinvestment in projects with sure returns; it induces nothing. Real base lines and countries' projections are needed. Practices of overpaying and the use of reverse auctions instead of paying market prices must be halted. Interests profiting from carbon markets will lobby hard against change.

The environment should be thought of as a non-cooperative good! Climate and energy security policies are dominated by politics and rent seeking—not rationality. What we need really are marginal gains around the edges, at each margin different policies and institutions are necessary. Start with no regrets actions and move out to actions that need funding (but pity the messenger to Congress). Before we expand we need to better understand where we have been. It seems that the EU Commission has learned; in their post-2012 proposal they have essentially cut off CDM, and hopefully they will be able to stand up to industrial pressure that has established itself around CDM funding.

Technology transfer may be the critical issue in negotiations. The GEF should eliminate some lines of business and concentrate on energy efficiency, the steel and cement industries, renewables and innovation in electricity generation. Technology needs-assessments must be done. The Montreal Protocol provides a good example - it turned out that most technologies were in the public domain. For others, licensing fees were competitive and royalty rates low. We should pay more attention to institutions (What mechanisms should be initiated?). We have to be more imaginative about deals; nearly all the best technologies are better deployed in China. The Chinese are investing in the US.

We were advised to emphasize generic technologies: ICTs, genomics and nanotechnology. Focusing on CO₂, power generation is the obvious target. The costs of R&D are relatively modest compared to full scale demonstration plants. Perhaps the most useful public policy action would be to construct a fossil fuel power generation plant fitted with state of the art CCS technology. We have good systems to fund basic research but not for applied scientific research—there is a “valley of death” from the laboratory to industry.

Conclusion: How Do We Get There from Here?

This session explored how to advance the various ideas raised in the conference.

The planetary threat requires planetary cooperation. There is a verticality that extends deep in the UN system. To address the problems of the 21st century we need to build horizontal shafts to connect the vertical silos of international organizations. We will need taxes, targets and transfers. The highest priority is to price carbon. We need targets, based on genuine national assessments, determining what a 2°C increase in temperature means in each country. We will need transfers from the West; there must be a package of real initiatives. Noting that Iran, Pakistan and Indonesia are not members of the IEA, perhaps we need a new mechanism—a Global Energy

³ Integrated Gasification Combined Cycle

Council applying a variety of capacities to provide the horizontality and leadership required. The G8+5 may be the best informal route to strengthening informal machinery.

One view was that carbon taxes and emission trading systems are basically irrelevant; in fact, actions in Europe will have a marginal impact (EU cumulative savings over 2006-2020 would represent 70% of China and India's annual emissions in the year 2020 alone). While we do need a benchmark carbon price, \$30 per ton tax is insignificant in a world of \$100 oil. We will need tough standards on cars and buildings. Business decisions are shaped in large part by non-price policy instruments. There are three critical tests:

- China must move to options other than coal
- Brazil must reverse deforestation of the Amazon
- We must deal with the footprint of the impact on private transport of the \$2000 car

With respect to China, we must find the incentives to reverse their coal program. We need plans the Chinese will define and agree to – what do they need and what can other countries do to help?

Another view was that the market needs strong price signals—we will run out of atmosphere before we run out of oil. Of course price signals are necessary, but not sufficient. We need strong price signals for nuclear and renewables to be competitive and to stimulate CCS research. In any case, we should tax energy and not emissions. A tax would be the first real evidence of serious intent.

We noted the plea that the current track is an emergency; with the current status of investment plans, development intentions and policy frameworks, that stabilization of atmospheric concentrations is not achievable. The starting point should be national. It is national positions that provide the basis for international negotiations and deals. It is where the commitment starts. We need genuine high quality national assessments—beyond 2050. We need to address mitigation and adaptation costs on a place specific basis. We should remain open on carbon taxes and targets—there is a lot of learning to be done. We need national footprint accounting. We should complement national assessments with short (10-20 years) national strategies to achieve GHG turning points. National strategies should include consideration of needs and costs and propose investment and technology policies. The OECD can help by encouraging common methodologies for assessments and strategies, and provide critical comments, summing up what they see. Sectoral agreements can be pursued individually, which can be later incorporated in a grand package.

Options for action should be examined through four windows: micro-economic analysis, macro-economic rent shifts (i.e. political economy of action), energy security, and the macro-economic consequences of low carbon growth. From the micro perspective, insulation improvements, fuel efficient commercial vehicles, lighting systems, air conditioning, water heating, fuel efficient vehicles, biofuel, sugarcane, and stand-by losses are all no regrets—the marginal “costs” of abatement are negative. For other options, there are real costs, with relatively low costs for nuclear and rising costs for other approaches, with CCS and avoiding deforestation having the highest marginal costs. The degree of regional and sector participation, CCS, wind, and cellulosic ethanol technology, and consumer behaviour are uncertain, each of which could decrease the “abatement supply”. There will be macroeconomic rent shifts. Of the total abatement cost imposed, a large proportion will be passed on to consumers, depending on the industry, and on government action. The majority of climate change policies do not conflict with energy security goals--the exception is coal. A carbon productivity “revolution” is required—three times faster than US labor productivity growth between 1870 and 1995.

Action Items

The ‘450ppm Stabilization Case’ is not attainable unless there is dramatic and early global action—too many infrastructure investments are locked in, there is too much pressure for development. We will need leadership, targets, taxes, and transfers. The following actions were proposed by various conference participants:

1. The G8+5 may be the best informal route to strengthening informal machinery. In Japan, the opportunity to include the +5 in a more meaningful way should not be missed. The G8+5 should establish a new formal mechanism—a Global Energy Council applying a variety of capacities to provide the horizontality and leadership required.
2. We need targets, based on genuine national assessments. The +5 must assume binding constraints in order for the US to accept the same. Each country should commit to its own national strategy, starting with end-use efficiency policies for buildings and transport. Incentives should be provided for early retirement of inefficient, vintage coal-fired plants. There should be a moratorium on new coal-fired plants, unless they are fitted with CCS.
3. The highest priority is international arrangements to price carbon, with harmonized schedules of phased-in tax increases, informing producers and consumers well in advance.
4. We will need transfers from the West—there must be a package of real initiatives. To find funds for the transfer of clean technology without “taxing the G8 to make its competitors more competitive” there should be a sectoral approach, focusing on industries with less tradable products like cement. A price should be established for forests, and funds dedicated to reduce deforestation.
5. To promote civilian nuclear power at low cost, China, Canada, Mongolia and Australia should enter into the commercial enrichment business, diversifying the supply of enriched uranium for lease. The IAEA must establish an enriched uranium fuel bank. We need internationally owned reprocessing plants (but limit the spread of reprocessing technology). The Global Nuclear Energy Partnership is one approach.
6. R&D of potentially sustainable biofuel technologies should be subsidized. Subsidies should be results oriented, budget limited and sunsetted. Support schemes should be performance and externality based; good examples are the Renewable Transport Fuel Obligation in the United Kingdom and the Low Carbon Fuel Standard in California.
7. To promote technology transfer, “Global Energy Innovation Centers” should be jointly funded by Annex-II countries and the host developing country. There should be a new graduated financial assistance program to deploy “uneconomic” technologies. Innovative models should be explored by donors. Examples are challenges/prizes, guaranteed markets, and free or low-cost licenses of key technologies to developing countries. The Clean Development Mechanism (CDM) is a failure and should be redesigned. The GEF should eliminate some lines of business and concentrate on energy efficiency, the steel and cement industries, renewables and innovation in electricity generation.